

Appendix D

**Major Public Comment Issues,
Northwest Power Planning Council
Framework Concept Papers, and
Public Positions on Fish and
Wildlife Management and Recovery**

Appendix D

MAJOR PUBLIC COMMENT ISSUES, NORTHWEST POWER PLANNING COUNCIL FRAMEWORK CONCEPT PAPERS, AND PUBLIC POSITIONS ON FISH AND WILDLIFE MANAGEMENT AND RECOVERY

The information in this appendix forms the underlying foundation of concerns and issues throughout the region. As time progresses, these issues and concerns will continue to be raised; and as better science and a more in-depth understanding of fish and wildlife management evolves, answers will emerge.

A. Major Public Comment Issues

The key questions listed below were identified from a three-day conference held in November 1998. These questions have been, and will continue to be the questions asked over time, which is why they have been included in this appendix.

DRAFT 3/1/99

QUESTIONS FROM THE 3-DAY NOVEMBER CONFERENCE *CREATING AND PRESERVING A HEALTHY, RESILIENT AND SUSTAINABLE SOCIAL AND ECOLOGICAL SYSTEM*

KEY QUESTIONS (More Than 5 Votes)

1. **(77)** Will politics continue status quo because of:
 - a. conflicting legal mandates (e.g., ESA, CWA, NWPA)?
 - b. a mismatch between political and ecological boundaries?
 - c. Corporate interests?
 - d. environmental groups strong campaign for their interests?
 - e. the lack of regional and/or national political will to resolve the problem?
2. **(35)** Will there be a proliferation of process by the sheer number of decision makers and stakeholders?
3. **(90)** Will the increasing Population lead to:
 - a. an urban and rural split?
 - b. reliance on mining and natural resources for economic development?
 - c. an increase in per capita consumption?
 - d. an unwillingness to examine/model futures analyses?
4. **(10)** Will there be a change in values:
 - a. that creates an unavailability of funding?
 - b. that constantly causes changes in economies and values?

- c. that end in greed?
- 5. **(11)** Is there a lack of trust:
 - a. with the government agencies?
 - b. among stakeholders?
 - c. others?
- 6. **(34)** Are we:
 - a. pitting species and resources against each other (using mitigation of one to "justify" loss of another)?
 - b. causing conversions of habitat we can't get back?
- 7. **(50)** Are we failing to manage ourselves:
 - a. by not focusing on species and systems?
 - b. because it is cheaper/easier to avoid responsibility than to take responsibility?
 - c. by transferring costs of one resource to another (e.g., not internalizing costs)?
 - d. by following private agendas (i.e., tragedy of common good)?
 - e. by the lack of developing a stewardship paradigm?
- 8. **(11)** Are there incompatible goals for river use?
- 9. **(16)** Is there an inability to deal with uncertainty (analysis paralysis) because:
 - a. there is an inability to move from crisis management to planning?
 - b. every interest group has ability to veto a plan?
 - c. there is an inability to change?
 - d. the cynicism is inhibiting the development of solutions?
 - e. there is an unwillingness to act in face of imperfect information?
- 10. **(23)** Is there something to learn from historical mistakes?
- 11. **(28)** Will an engineering solution work for the biological/environmental problems (techno-fix)?
- 12. **(87)** Is there a lack of an ecosystem approach to species recovery because of:
 - a. a lack of understanding of the natural spawning process?
 - b. a lack of a total system focus?
 - c. an increasing awareness of natural/normative solutions?
 - d. a lack of understanding the importance location of headwaters to the system makes?
 - e. an increasing recognition of place (i.e., local involvement)?
 - f. a violation of basic ecological principles?
 - g. conversion of irreplaceable habitat?
- 13. **(47)** Is the Government living up to promises of sovereignty:
 - a. involving public v. sovereign concerns?
 - b. by understanding Indian Treaty rights?

B. Framework Alternatives

In November 1998, the Framework Project received 28 submitted concept papers on how the Columbia River Basin should be managed (see Section C below). Over one-hundred individual fish and wildlife recovery strategies were developed from these papers. The strategies were then distilled into seven alternatives. The alternatives reflect a range of options that span the views of regional interests. This wide variance of opinion is why these alternatives have been included in this appendix.

In February 2000, the Northwest Power Planning Council published these alternatives in The Year of the Decision, Renewing the Northwest Power Planning Council's Fish and Wildlife Program. However, drafts of the alternatives were reviewed throughout the Framework Process. Numerous Sample Implementation Actions were taken from these various drafts. Although some of the actions cited in the SIA Tables (Volume 3) may not appear in the final Framework alternatives, they still reflect specific steps that have been, or are being, considered by the Region for fish and wildlife.

Summary of Alternative 1: A connected, self-sustaining ecosystem

Vision

Alternative 1 suggests that the only way to restore fish and wildlife is to restore the ecosystem to a much more natural state by eliminating dams, hatcheries, and other artificial constraints and approaches, and by taking very aggressive actions to protect and restore habitat. Alternative 1 suggests that it is not possible to provide artificial mitigation for the losses caused by development.

Instead, Alternative 1 focuses on restoring as many areas as possible through natural means. This alternative virtually eliminates human services such as power generation and transportation on the Lower Snake River, and would significantly reduce them on the Columbia River. This alternative puts creation of a more natural ecosystem ahead of short-term economic needs.

Under Alternative 1, effort and money now spent to maintain relatively constant conditions that benefit economic needs would be redirected toward changing the ecosystem back toward the condition it was in before large-scale human development. Management of fishing would change as well: Alternative 1 would put the short-term needs of native fish and wildlife ahead of fishing needs.

Biological Objectives

This alternative seeks to help native fish, wildlife, and plant communities by restoring the Columbia River Basin's natural characteristics and functions and by discouraging proliferation of non-native species. Alternative 1 would apply the most aggressive approach to habitat improvement on both public and private lands.

Hydropower

Alternative 1 seeks to eliminate or significantly reduce fish and wildlife impacts caused by construction and operation of the hydroelectric system through dam breaching and other significant changes. This alternative supports those measures that restore or mimic natural ecosystem functions.

Habitat

This option focuses intensively on habitat improvements in both the mainstem sections of the Columbia and Snake rivers and their tributaries. The habitat measures would require significant land use changes on both public and private lands.

Hatcheries

Alternative 1 distinguishes itself from other alternatives because it does not support the use of fish hatcheries except for the temporary preservation of extremely endangered species. It also discourages the proliferation of non-native species and conditions favoring non-native species below and above dams that have permanently blocked salmon migration. Alternative I suggests that artificial approaches such as hatcheries are unlikely to produce long-term improvements.

Harvest

This alternative would reduce virtually all fishing except that related to tribal ceremonial, subsistence, and commercial purposes. This alternative would also require that fish be caught in their rivers of origin to emphasize benefits to local economies and to minimize impacts on weak wild stocks that sometimes mix with healthier stocks in mainstem portions of the Columbia River.

Human Effects Objectives

Of all the alternatives, Alternative 1 puts the highest priority on the aesthetic, environmental, and amenity values of the river and its natural resources. Alternative 1 assumes that restoring the most natural conditions on the river is the best way to provide significant economic, social, and cultural value to the Northwest over the long run.

Strategies

- Breach the John Day, McNary, and four Lower Snake dams.
- Manage the river and river uses for seasonal flows and water quality consistent with the life cycle needs of salmon, steelhead, and resident fish species (those that do not migrate to the ocean).
- Reduce the amount of water stored for hydropower production to provide for more natural flows, including periodic flooding and droughts to restore native plants.
- Protect, connect, and restore habitat on the tributaries throughout the Basin.
- Restore salmon and steelhead passage into upper portions of the Basin at Chief Joseph, Grand Coulee, and Hells Canyon dams.

- Increase connections among habitats in the Basin, including ocean environments.
- Phase out use of artificial means of salmon recovery, such as barging and hatcheries, as habitat is restored.

Summary of Alternative 2: A reconnected ecosystem to support salmon fishing

Alternative 2 suggests that restoring habitat in the mainstem Columbia and Snake rivers is the most critical factor for fish and wildlife recovery. Unlike Alternative 1, however, this alternative suggests it is possible to mitigate damage caused by the hydrosystem. This alternative emphasizes increasing and sustaining salmon fishing while moving the system toward the condition it was in before large-scale human development. Alternative 2 treats areas above and below the dams that block salmon migration as separate systems.

Vision

Alternative 2 seeks to restore and manage the ecosystem primarily for native fish, wildlife, and plants. Alternative 2 explicitly recognizes tribal harvest obligations and is willing to accept some increased risk to native species to increase fishing opportunities. Alternative 2 takes a middle-ground approach to habitat requirements on private and public lands.

Biological Objectives

This alternative seeks to take immediate action to stop further loss of biological diversity of fish, wildlife, and plants, especially those listed under the Endangered Species Act. Immediate objectives include enhancing conditions for healthy fish and wildlife populations; emphasizing restoration and enhancement of conditions compatible with native species; discouraging proliferation of non-native species except in special circumstances; and, managing human activities to meet regional and Federal air and water quality standards.

Hydropower

Alternative 2 seeks to eliminate or significantly reduce fish and wildlife impacts caused by construction and operation of the hydropower system. Alternative 2 calls for the breaching of the four lower Snake River dams.

Habitat

Alternative 2 applies moderately intensive habitat measures on both public and private lands, and instead focuses more aggressive actions on dams. It also calls for the acquisition and development of wildlife habitats as mitigation for habitat damage caused by hydropower development.

Hatcheries

Alternative 2 would use hatcheries to help restore weak fish runs and to ensure increased fishing opportunities. For areas below dams that block salmon migration, Alternative 2 would require that hatcheries produce fish that closely match those lost,

but would accept slightly more risk to native species to increase fishing opportunities. For areas above the dams that block salmon migration, this alternative would allow hatcheries to produce native-type fish that could survive in the changed ecosystem.

Harvest

Alternative 2 emphasizes the fact that fishing provides important cultural, spiritual, and commercial benefits to the Region. This alternative seeks to provide conditions to meet ceremonial, subsistence, and commercial fisheries consistent with court interpretations of Indian treaties. The alternative would shift fishing toward spawning areas to emphasize benefits to local economies and to reduce the risk to weak stocks that mix with healthier stocks caught in the mainstem section of the river. Finally, Alternative 2 emphasizes sport fishing over non-Native American Indian commercial fishing.

Human Effects Objectives

In establishing regional priorities for economic development and environmental restoration, Alternative 2 puts a high priority on the ecological values of the river and its natural resources, in particular certain fisheries. It puts a greater emphasis than Alternative 1 on ensuring more fish for tribal and sport fishing.

Alternative 2 takes a moderate approach to public and private lands when it comes to protecting or restoring habitat. As the river is modified to accomplish its vision, Alternative 2 would mitigate for significant economic costs by continuing to provide existing levels of flood control, a hydropower backbone for the power system (albeit reduced from current levels); and, significant contributions to regional transportation and agricultural needs.

Strategies

- Breach the four Lower Snake dams.
- Manage the river to return seasonal flow patterns for salmon and steelhead while also protecting upriver fish that do not migrate to the ocean.
- Increase habitat connections throughout the Basin, including estuary and marine areas.
- Make careful use of hatcheries as part of a coordinated plan that restores habitat for the fish that are released. Alternative 2 would develop new hatchery production in the John Day pool to mitigate for lost mainstem salmon habitat.
- Eliminate fish barging.
- Above the dams that block salmon and steelhead migration, tailor programs to provide resident fish and wildlife required by local conditions and management needs.

Summary of Alternative 3: A Snake River that is ecologically connected to the Columbia River

This alternative breaches the Lower Snake River dams and relies on increased use of fish hatcheries. The focus of this alternative is to increase the number of Snake River fall chinook salmon, using dam breaching and hatcheries, so that more of the healthy Hanford Reach salmon runs can be caught without endangering the Snake River fish that migrate with them.

Vision

This alternative envisions an ecosystem that increases currently productive fish and wildlife populations and recovers depleted populations to the point of self-sustainability, with a very low probability of extinction in the foreseeable future.

The ecosystem would be restored and managed primarily for native fish, wildlife, and plants. However, Alternative 3 would put a greater emphasis on the use of fish hatcheries to address tribal harvest obligations and to increase recreational and commercial harvest.

Biological Objectives

Alternative 3 seeks to increase the overall productivity and resilience of the Columbia River ecosystem by taking immediate action to stop further loss of biological diversity of fish, wildlife, and plants, especially those listed under the Federal Endangered Species Act. Alternative 3 also would try to enhance conditions for currently productive fish and wildlife populations, emphasizing native species, while discouraging proliferation of non-native species except in special circumstances.

Hydropower

Alternative 3 seeks to reduce fish and wildlife impacts associated with the dams, but takes an approach that is less aggressive than Alternatives 1 and 2. Fish migration improvements at the dams are contemplated.

Habitat

Alternative 3 would place the highest priority for habitat improvements on public lands. Alternative 3 would reduce the habitat burden on private lands compared with Alternatives 1 and 2. Alternative 3 also would seek to acquire and develop wildlife habitat to mitigate for habitat lost to hydropower development.

Hatcheries

Alternative 3 would allow use of hatcheries in areas below dams that block salmon migration, but would require that the fish released closely match those lost. For areas above dams that block salmon migration, Alternative 3 would try to restore and enhance conditions to increase and maintain native resident fish species wherever possible. This option would allow mitigation with non-native species only in situations where those species would have limited interaction with native species.

Harvest

Alternative 3 seeks to provide productive regional and local fisheries, in particular, ceremonial, subsistence, and commercial fishing consistent with court interpretations of Native American Indian treaties. Alternative 3 would shift fishing toward spawning areas to emphasize benefits to local economies and to reduce the risk to weak stocks that mix with healthier stocks harvested in the mainstem portion of the river. Finally, Alternative 3 would emphasize sport fishing over non-Native American Indian commercial fishing.

Human Effects Objectives

Alternative 3 puts a high priority on the ecological and amenity values of the river and its natural resources. Alternative 3 would attempt to mitigate for significant transitional economic impacts by providing existing levels of flood control; the hydropower backbone for an adequate, economical, efficient, and reliable power supply; and regional transportation and agricultural needs. This alternative's biological focus on the Snake River would concentrate its human effects in that region as well.

Strategies

- Restore mainstem habitat in the Snake River by breaching the four Lower Snake dams.
- Manage the river to return some seasonal flow pattern for salmon and steelhead, while also protecting upriver populations that do not migrate to the ocean.
- Protect, connect, and restore key habitats.
- Make careful use of some artificial methods (such as hatcheries).
- Eliminate fish barging.

Summary of Alternative 4: Experiment to reduce scientific uncertainty

In Alternative 4, current programs would continue but would be managed more like carefully designed experiments to test uncertainties critical to the decision to move forward with the actions contemplated in Alternatives 2, 3 or 5. Findings would be evaluated before major changes were made to dams.

Vision

This alternative continues existing programs while reducing scientific uncertainty. Alternative 4 seeks the middle ground between short-term economic return and longer-term environmental quality.

Biological Objectives

Because of its emphasis on experimentation, Alternative 4 is described in terms of uncertainties that are suggested by differences in Alternatives 2, 3 and 5. In addition to the experimental design, Alternative 4 includes tributary habitat measures that are moderately intensive on both public and private land.

Hydropower

Alternative 4 would test drawdown, leaving more water in the river, passing fish over dams, and other techniques before making significant changes to the hydrosystem.

Habitat

Alternative 4 is less aggressive than previous alternatives on both public and private land. Alternative 4 also seeks to acquire and develop terrestrial habitats to mitigate for wildlife lost to hydropower development.

Hatcheries

For areas below dams that block salmon and steelhead migration, Alternative 4 would use hatcheries to help specific species. Hatcheries would be required to produce fish species that closely match those lost. For areas above dams that block salmon passage, Alternative 4 would restore and enhance conditions to increase and maintain native resident fish species wherever possible.

Harvest

Alternative 4 seeks to create an ecosystem that can provide productive regional and local fisheries, in particular, conditions to meet ceremonial, subsistence, and commercial fisheries consistent with court interpretations of Native American Indian treaties. Alternative 4 would shift fisheries toward spawning areas to emphasize benefits to local economies and to reduce the risk to weak stocks that mix with healthier stocks that are harvested in mainstem sections of the river. Alternative 4 emphasizes sport fishing over non-tribal commercial fishing.

Human Effects Objectives

Alternative 4 would attempt to mitigate for significant economic impacts by providing existing levels of flood control; the hydropower backbone for an adequate, economical, efficient and reliable power supply; and regional transportation and agricultural needs. Finally, Alternative 4 seeks to ensure that significant costs would be justified by effective fish and wildlife recovery before they were incurred. This justification would be made through research and experimentation.

Strategies

- Use drawdown to test restoration effects on mainstem habitat.
- Use hatcheries to make up for lost habitat.
- Reduce in-ocean harvest to increase numbers of returning adult salmon.
- Test the effectiveness of restoring habitat in tributary watersheds.
- Test the delayed effects of dams on salmon survival.
- Continue existing flow, spill, and fish barging programs, except where the design of experiments requires changes.
- Above the dams that block salmon migration, tailor programs to provide resident fish and wildlife required by local conditions and management needs.

To evaluate uncertainties, some potential experiments are as follows:

- Limited drawdown of the reservoir behind McNary dam.
- More water from the Snake River Basin, and possibly for Canada, would be left in the river for fish.
- Elimination of certain fisheries, such as that in Southeast Alaska
- Implementation of innovative habitat programs

Summary of Alternative 5: Rebuild fish and wildlife by doing everything but breaching dams

Alternative 5 suggests that the changes caused by dams can be mitigated through the use of aggressive habitat restoration, fish hatcheries, and other measures short of breaching dams. This alternative aims to build healthy, harvestable salmon populations and to stabilize weak stocks, while preserving current human benefits of the multipurpose dams. Alternative 5 would rely on improved technology and tributary habitat improvements to achieve its vision without dam breaching.

Vision

This alternative sees a Columbia River that provides a substantial contribution to the regional economy while attempting to ensure that natural amenities are retained and that legal obligations to the tribes and the environment are met. This alternative puts a slightly greater emphasis on short-term economic return than the previous alternatives. Alternative 5 envisions the most aggressive habitat improvements on both public and private land. It also envisions significant effort to improve fish survival at dams through the use of improved water management and new technology.

Biological Objectives

Increase the overall productivity and resilience of the Columbia River ecosystem by stopping the loss of biological diversity of fish, wildlife, and plants, especially those listed under the Endangered Species Act. Alternative 5 also would try to enhance conditions for currently productive fish and wildlife populations, emphasize restoration and enhancement of conditions compatible with native species, and discourage proliferation of non-native species except in special circumstances.

Hydropower

Alternative 5 seeks to reduce fish and wildlife impacts associated with the hydrosystem using improved technology, but would not breach any dams. It would use flow augmentation, surface fish bypass, changed operations, extended length fish screens, and other measures short of dam breaching to improve fish migration.

Habitat

Alternative 5 would place high priority and significant intensity on habitat improvement on both public and private land. It would match the most aggressive habitat actions (with the exception of dam breaching to create mainstem habitat)

called for by the previous alternatives. Finally, Alternative 5 seeks to acquire and develop wildlife habitats to mitigate for losses caused by hydropower development.

Hatcheries

Alternative 5 calls for the extensive use of hatcheries to make up for lost habitat.

Harvest

Alternative 5 seeks to provide productive regional and local fisheries, in particular, conditions to meet ceremonial, subsistence, and commercial fisheries consistent with court interpretations of Native American Indian treaties. Alternative 5 would shift fisheries toward spawning areas to emphasize benefits to local economies and to promote known stock fisheries and would emphasize sport harvest over non-Native American Indian commercial harvest.

Human Effects Objectives

Because it does not call for breaching any dams, Alternative 5 would provide existing levels of flood control, hydropower, and other economic benefits. Alternative 5 also seeks to improve opportunities for fishing through the use of hatcheries. Finally, Alternative 5 seeks to select actions to restore and enhance the environment with the greatest likelihood of achieving the ecological objectives at the least cost.

Strategies

- Continue current flow programs, with some protection for upstream reservoirs. Secure use of water from Canadian storage reservoirs to meet flow needs.
- Make capital improvements at the mainstem dams designed to approximate natural conditions (e.g., surface bypass).
- Manage flows in the Hanford Reach to match natural seasonal and daily patterns.
- Set aside the Hanford Reach as an ecological preserve.
- Make use of fish transportation as appropriate.
- Increase habitat connections throughout the Basin.
- Use significantly more hatcheries to replace lost spawning areas.
- Above the dams that block salmon and steelhead migration, tailor programs to provide resident fish and wildlife required by local conditions and management needs.

Summary of Alternative 6: Rebuild species, enhance current river uses

Alternative 6 would allow for adjustments in river operations for fish to increase investment in habitat and other measures. Like Alternative 5, this alternative aims to build healthy, harvestable salmon populations and stabilize weak stocks at reduced costs. A key difference between this alternative and others is that it contemplates the use of non-native species as mitigation for changes caused by development.

Vision

This alternative sees a Columbia River where strong salmon and steelhead runs increase in number and inhabit more of the river system. It would allow for recurring levels of harvest, sustained resident fish species and rebuilt weakened or marginal stocks of subspecies where there is a sufficient likelihood of recovery at socially acceptable costs. The Columbia River Basin would continue to support full spectrums of river-related economic activities and accommodate anticipated regional growth. All existing mainstem hydroelectric projects would remain in place. The river system's stewards would both maintain and improve multipurpose Federal projects, and also promote and ensure the completion of a variety of programs throughout the Basin to improve the ecosystem generally or individual watersheds specifically.

Biological Objectives

Alternative 6 seeks to increase the overall productivity and resilience of selected fish and wildlife species, especially those listed under the Endangered Species Act and others that can contribute to regional fisheries. Alternative 6 would take immediate action to stop further loss of biological diversity of fish, wildlife, and plants, especially those listed under the Endangered Species Act. Alternative 6 would enhance conditions for currently productive (as opposed to solely native) fish and wildlife populations.

Hydropower

Alternative 6 seeks to reduce the current hydropower cost impacts caused by fish and wildlife recovery measures by decreasing the amount of water dedicated to fish in the spring and increasing the amount of water available for fish in the summer. These changes would produce hydropower cost savings that would be used to make investments in other measures to restore fish and wildlife. Alternative 6 would attempt to reduce fish and wildlife impacts associated with the hydrosystem using improved technology such as surface fish bypass, extended-length fish screens, maximized fish barging, and other measures that do not reduce the hydropower output of the system.

Habitat

Alternative 6 would use moderate habitat approaches on private land and moderate-to-intense approaches on public land. This alternative would seek to increase hydropower revenues, and would use the increases to invest in habitat improvements.

Hatcheries

Alternative 6 seeks extensive use of fish hatcheries to meet fishing needs. This alternative seeks to create an ecosystem that can provide productive regional and local fisheries. Alternative 6 would permit use of artificially supplemented stocks to meet tribal harvest objectives and would use artificial production techniques to meet non-Native American Indian harvest objectives.

Harvest

Alternative 6 seeks to provide conditions to meet ceremonial, subsistence, and commercial fisheries consistent with court interpretations of Native American Indian

treaties. It would shift fisheries effort to emphasize benefits to local economies and to reduce risks to weak stocks that mix with stocks harvested in the river's mainstem sections. Finally, Alternative 6 emphasizes sport harvest over non-Native American Indian commercial harvest.

Human Effects Objectives

Alternative 6 seeks to provide traditional economic benefits, while reducing impacts on the environment and fish and wildlife. It would mitigate for the loss of native species without jeopardizing existing economic activities. It would provide traditional flood control and commercial supplies of salmon through the most efficient economic means. Alternative 6 prioritizes tribal and then recreational fisheries over traditional commercial fisheries. It would seek to protect the regional power system's ability to financially support fish and wildlife recovery efforts by maintaining or improving electricity generation as a high priority river use.

Strategies

Strategies would be similar to those of Alternative 5, with the following differences:

- Change the flow augmentation program to produce additional funds for fish and wildlife measures.
- Use supplemented stocks in the river to meet tribal harvest objectives.
- Meet non-Indian harvest objectives through artificial production.
- Improve and maximize fish barging.

Summary of Alternative 7: Rebuild species through managed approaches

This alternative envisions a river system managed to provide maximum economic benefits, including increased power production, increased irrigation, and increased fishing under scientific management.

Vision

Alternative 7 would increase the multiple benefits of dams and the river through application of quantifiable data. It would increase hydropower production; improve harvest, habitat, and hatchery management; maintain existing irrigation and allow more consumptive water use; maintain navigation to river ports; and use experiments to gather useful data.

Biological Objectives

This alternative seeks to quantify the benefits and costs of proposed strategies and implement them solely on the basis of cost-effectiveness. This alternative calls for improved measurements of survival to identify high mortality areas and the use of computer models to organize data and depict relationships to enable survival predictions. This alternative would focus on "hot spots" of mortality, abandon spring flow augmentation and real-time flow management, and experiment with late summer/fall

flow augmentation in low water years. Finally, Alternative 7 would introduce predators to control terns and allow limited marine mammal hunting.

Hydropower

Alternative 7 would enhance the ability of the hydrosystem to produce economic benefits. It would limit hydropower funding of fish and wildlife recovery to offset the effects of hydropower construction and operation. Finally, this alternative would limit fish and wildlife impacts on the hydrosystem by maximizing fish barging, expanding surface collection, and replacing old turbines with fish-friendly turbines.

Habitat

This alternative would sort habitat into "nature preserve" and production categories, decentralize habitat decisions, and focus regional habitat decisions on inter-jurisdictional issues. This alternative would leave habitat issues to local decision-makers, eliminate wildlife mitigation, and use the BPA Environmental Foundation to fund habitat improvements.

Hatcheries

Alternative 7 seeks to unify hatchery reporting and measure hatchery success by returns to watersheds. It calls for the marking of all hatchery fish. This alternative would provide funds for genetic research to increase fish size, improve disease resistance, and aid adaptation to warm temperatures. This alternative would share fishing tag revenues with hatcheries that return fish to watersheds, move hatchery management to tribes, and declare some tributaries off limits to hatchery production and others as production and supplementation watersheds.

Harvest

This alternative seeks to manage harvest to protect weak stocks by stopping all harvest of wild fish; adopting tributary-specific escapement goals; eliminating ocean harvest; redirecting lower river mixed stock harvest to terminal areas; redirecting tribal mixed-stock harvest to ladder and tributary fishing; buying selective gear for harvesters; and by improving harvest enforcement.

Human Effects Objectives

Alternative 7 seeks the maximum use of natural economic incentives to implement only cost-effective strategies. This alternative puts human economic needs above changes designed to enhance the natural environment.

Strategies

In addition to the actions in Alternative 6, Alternative 7 would:

- Abandon all spring flow augmentation and real-time management of flow for fish. Focus flow programs solely on temperature control.
- Focus mainstem research efforts on measurement of survival through alternate passage methods at dams to reduce "hot spots" for mortality.
- Engineer spawning channels to expand natural spawning areas.

- Abandon efforts to protect existing wild stocks in tributaries where there is already significant hatchery influence.
- Declare specific tributaries "off-limits" to hatcheries to provide buffer zones against genetic problems with hatchery production.
- Move hatcheries to tribal management in settlement of treaty obligations.
- Ban harvest of wild stocks in the mainstem.
- Work toward elimination of ocean salmon harvest.
- Redirect tribal mixed-stock commercial harvest to selective harvest at fish ladders and in tributaries.
- Take direct action to control the bird population on Rice Island, marine mammals, and Northern pikeminnow that prey on salmon.
- End federal, regional, and state regulation of habitat restoration.

C. Summary of Framework Concept Papers

The following is a summary of the 28 concept papers prepared by the Framework Workgroup. These concept papers were submitted to the Framework for consideration as possibilities as multi-species plans for fish and wildlife recovery in the Columbia River Basin. The following information and letters form the foundation of values, perspectives, and suggested actions for fish and wildlife mitigation and recovery policy in the Region to build on.

Northwest Power Planning Council FRAMEWORK CONCEPT PAPERS November 1998

No. Concept Paper

1. Save Our Wild Salmon Coalition

GOAL

Abundant, harvestable, self-sustaining, wild, native fishes.

OBJECTIVES

- Protect and restore habitat;
- Improve artificial production;
- Improve harvest management by protecting wild stocks and targeting strong stocks; and
- Reduce dam mortality by moving toward normative river conditions and providing safe passage at all projects.

STRATEGIES

- Habitat: Manage lands to protect f/w habitat; reduce commodity subsidies, protect and restore wetlands, estuaries & riparian areas; provide stream flows, provide water from upper Snake

pending dam removal; conserve water; screen diversions; sustainable farming; end water waste; comply with Clean Water Act; control non-native predators.

- Hatcheries: plant fish consistent with watershed carrying capacity avoid harm to wild fish; don't use in lieu of habitat; reduce spending in favor of habitat spending.
- Harvest: allow escapement and renegotiate international treaties.
- Dams: no new dams, end transport, take out lower Snake dams, lower JDA to spillway; move to normative conditions elsewhere; remove unmitigable dams (Condit, Enloe); meet agency and tribal flow targets, spill, pay the true cost of hydropower.

MANAGEMENT ACTIONS

None identified

2. Idaho Rivers United, Idaho Steelhead and Salmon United, and Trout Unlimited

GOAL

Attain naturally sustainable f/w to support harvest by restoring biological integrity and diversity; delist ESA stocks; maintain affordable energy and strong BPA for regional prosperity.

OBJECTIVES

- Snake stocks at harvestable levels via 2-6% smolt-adult returns, and improved egg-smolt survival;
- Rebuild Snake ChF in Blue Mtn. Tributaries via 2-6% smolt-adult returns;
- Recover Snake sockeye via 1.5-2% smolt-adult returns to Redfish;
- Rebuild mid-Col ChSp/Su, sockeye and StSu by improved smolt survival with flow aug. and normalized hydrograph;
- Enhance mid-Col. ChF by preserving Hanford and normalized hydrograph below Priest;
- Secure ICBMP category 1 subbasins and reconnect category 2 subbasins, implement IRCs and VARQ flood control strategies at Hungry Horse and Libby; and
- Ensure cost-effective investments.

STRATEGIES

- Breach lower Snake dams by 2005 (objectives 1-3);
- Restore normative flows from Priest to estuary via flow augmentation (objectives 4-6);
- Use BPA money for projects with the best likelihood of success, and maintain or reduce direct outlays as stocks recover;
- Commit to affordable steps to retain access to low-cost energy.

MANAGEMENT ACTIONS

Snake:

- end transportation;
- breach the lower dams;
- eliminate flow augmentation;
- normalize Hells Canyon flows;
- implement IRCs at Dworshak;
- phase out hatcheries and supplementation as stocks recover.

Upper Columbia:

- use Canadian storage to augment flows;
- 24-hour spill in the Spring from Priest down;
- IRCs at all storage projects shift peaking to upper Columbia projects;
- shape flood control releases to help resident and anadromous fish.

Lower Columbia:

- operate JDA at MIP pending JDA draw-down studies through 2006; other projects at MOP;
- install gas abatement, ladder improvements, etc.;
- evaluate extended screens, surface collectors, etc. at TDA;

- stop spending on Bonneville outfall.
- Use tiered flow for Kootenai white sturgeon, and IRCs and VAPQ.
- coordinate planning and implementation system-wide

3. Columbia River Inter-Tribe Fish Commission

GOAL

Restore anadromous fish to support tribes' cultural and commercial practices emphasizing natural production and healthy rivers; protect tribes, sovereignty and treaty rights

OBJECTIVES

- Within 7 years, halt declines in salmon, sturgeon, and lamprey above Bonneville;
- Within 25 years, increase salmon returns to 4 million naturally-produced fish above Bonneville and sturgeon and lamprey to harvestable levels;
- Restore salmon to historic abundance in perpetuity.

STRATEGIES

- Improve streams by controlling land use;
- Improve flows by limiting diversions and using water efficiently;
- Restore watersheds for threatened stocks;
- Use supplementation for most threatened fish and re-introductions; use flow, spill, drawdowns, efficient turbines and operations and predator control;
- Restore critical estuary habitat;
- Ret Alaska and Canadian harvest by abundance;
- Use cold stored water and more and better ladders for adults
- Reduce water contaminants
- Monitor tributary production and escapement to improve harvest management
- Research lamprey and develop supplementation programs
- Artificial production for white sturgeon above Bonneville.

MANAGEMENT ACTIONS

Habitat:

- land and water users meet habitat conditions required to achieve survival rates
- use coarse-screening process to determine allowable watershed impacts

Production:

- use supplementation to avoid extirpations

Passage:

- end transportation
- return mainstem habitat to natural conditions for 71% survival by drawdowns, flows, spill, breaching lower Snake dams and lowering JDA to spillway.

4. Shoshone-Bannock Tribes

GOAL

Maintain & restore ecosystem for all naturally producing indigenous species and provide for cultural/spiritual needs.

OBJECTIVES

- Restore the natural hydrograph and lessen ecosystem impacts generally;
- Continue existing habitat protections
- Enforce existing treaties and f/w laws;
- Review existing laws that hurt habitat
- Restore damaged habitat;

- Increase production of indigenous f/w
- Secure harvest opportunities.

STRATEGIES

None identified

MANAGEMENT ACTIONS

None identified

5. Trout Unlimited

GOAL

Protect and restore ecological values of the Basin, create a network of complex, interconnected, high quality habitats that support sustainable and harvestable wild fish while mitigating impacts on the Region.

OBJECTIVES

Habitat:

- protect existing habitat;
- restore degraded habitat; and
- enforce existing land use regulations.

Hydropower:

- no new development;
- make existing facilities fish-friendly;
- restore normative conditions by breaching lower Snake dams and lowering JDA to spillway;
- use spill, flow augmentation, better bypass and gas abatement.

Hatcheries:

- use to restore wild salmonids;
- reduce use of hatcheries to replace degraded habitat.

Harvest:

- reduce ocean and river harvest and manage for conservation;
- develop selective fisheries;
- resolve US-Canada allocation and equity issues.

Mitigation:

- maintain cost-based power, low-cost transportation for agricultural products, and irrigation pumping from mainstem reservoirs.

STRATEGIES

- **Habitat:** protect habitat for viable populations, breach lower Snake dams and lower JDA to spillway, Federal agencies manage land to restore degraded habitat including finalization of standards based on ICBMP science; enforce ESA "take" provisions on private land; implement Clean Water Act TMDLs and state ambient water quality standards and waterway uses; enforce state water laws on waste quantity.
- **Hydropower:** all dams provide suitable flows passage and consistency with watershed efforts; restore normative conditions, reduce reliance on transportation and upstream storage; pending draw-downs, use transportation only in low-flow years; identify and address problems at non-hydropower dams.
- **Hatcheries:** gather more information on natural production; use only if no impact to wild salmonids, mimic natural conditions in broodstock collection, rearing, feeding, acclimation and release; treat artificial production experimentally, complete review of Mitchell Act and LSCRP, PUD and other facilities.

- **Harvest:** allow harvest only where impacts to wild fish are quantified and minimized; adopt abundance-based regime in US-Canada to protect weak stocks; reduce harvest of chinook to 50% total mortality throughout their range; continue to develop selective fisheries.
- **Mitigation:** show those who would privatize PMAs that BPA is carrying out vital energy conservation and f/w programs; support development of alternative forms of transportation; and lower irrigation pumps while paying higher electric costs of pumping.

MANAGEMENT ACTIONS

None identified

6. C. Petrosky, H. Schaller, P. Wilson, E. Weber, and O. Langness

GOAL

Sustainable, naturally-producing f/w to support tribal and non-tribal harvest, cultural and economic practices by restoring biological integrity and genetic diversity of ecosystem and through other ways compatible with naturally producing f/w.

OBJECTIVES

- Reduce cumulative mortality to encourage wider distribution and more life history types within metapopulation concept;
- For upper-basin anadromous fish, significantly reduce passage mortality by returning to more normative conditions;
- Recover, de-list and restore ESA fish to harvestable levels;
- Rebuild depleted non-ESA fish and protect healthy natural populations to support harvest while maintaining wide distribution
- Rebuild depleted lamprey to support cultural use and restore ecosystem function;
- Restore anadromous fish ecosystem functions to benefit native resident fish and wildlife by increasing prey base and nutrient recycling and restoring more normative conditions.

STRATEGIES

- Implement actions with best chance of success,
- Generate information to reduce uncertainties,
- Use an experimental management approach that prioritizes conservation and recovery of weak populations while compatible with other f/w, and
- Emphasize actions that benefit wide range of species:
- Listed fish:
 - Snake: promptly implement hydropower actions under 1999 ESA decision and evaluate effects between regions
 - Upper Columbia: implement hydropower actions under ESA and study feasibility of JDA draw down, evaluate effects of hydropower actions between regions
 - Lower Columbia: take other actions and evaluate stocks for between-region comparison.
- Unlisted anadromous fish: evaluate stocks for between-region comparison.
- Other anadromous fish: evaluate through temporal and spatial comparison of population and survival rates.
- Native resident fish and wildlife: evaluate through coordinated, directed studies.

MANAGEMENT ACTIONS

- Coordinate major actions through reverse staircase design, taking actions with measurable responses to illuminate uncertainties, primarily through adult-to-adult and/or smolt-to-adult returns, compared to expected responses for key PATH hypothesis
- Listed fish:
 - Snake: breach four lower dams, evaluate flow augmentation components; reduce and evaluate experimental hatchery releases, later increasing; phase out hydro-mitigation hatcheries as runs increase. Initially, low harvest rates, increasing with recovery. Implement improved land

management to restore productivity and connections. Coordinate through experimental management program.

Upper Columbia: evaluate feasibility of breaching JDA and implement by 2012; evaluate flow augmentation elements, specify major non-hydropower actions;

Lower Columbia: access stocks to develop actions within experimental framework.

- Unlisted anadromous fish: manage harvest to achieve management goals; improve land management, evaluate effects of hatchery release, all coordinated through experimental program.
- Other anadromous fish: benefited by actions for anadromous species.
- Native resident fish and wildlife: restore free-flowing river reaches and riparian habitats to reduce conflicts with anadromous fish flows.

7.a Oregon office of NWPPC (no drawdown, dam retrofit, incremental approach)

GOAL

Sustainable, naturally producing f/w to support social, cultural and economic practices such as tribal and non-tribal harvest, by restoring biological integrity and genetic diversity of ecosystem and through other ways compatible with naturally producing f/w. When devising strategies, consider economic and social factors to produce high quality of life and achieve multi-species goals.

OBJECTIVES

- **Primary:** Provide for healthier ecosystem, thereby reducing cumulative impacts on f/w to attain sustainable, diverse, harvestable populations.
- **Specific:**
 - Anadromous salmonids: promote wide array of life histories by restoring depressed populations and maintaining or enhancing healthy stocks and reintroducing and re-establishing stocks across traditional range where feasible.

Non-anadromous salmonids: Rebuild sturgeon and lamprey across historic range, if possible.

Native resident fish: promote wide array of life histories by restoring weak populations to sustainable, harvestable levels and enhancing healthy native stocks, and reintroducing and re-establishing stocks in traditional range where feasible and economically justified.

Non-native resident fish: maintain and enhance in areas where native populations are extirpated or their restoration is infeasible.

Wildlife: manage for native species, protect existing range, expand migratory corridors and link habitats to promote diversity; focus on habitat quality, not quantity. For non-native species, follow non-native resident fish protocol.

Socio-economic:

Cultural: allow salmonids to reach tribal treaty harvest objectives and lamprey and sturgeon to serve cultural needs.

Economic: Maintain shipping from all river ports. Maintain hydropower production to greatest extent possible and restore lost generation through aggressive energy conservation and peak load management. Maintain grazing through use of best management practices with riparian set-asides and fencing in fish-bearing streams and wildlife refuges and temporary mitigation for transition to different land uses.

Forestry: promote sustainable cut with 100-ft riparian set asides for fish-bearing streams and temporary mitigation for transition to best management practices. Irrigation: seek water conservation and efficiencies.

Social/legal: strictly enforce Clean Water Act throughout Basin.

STRATEGIES

- **Management intent:** re-establish water velocities equivalent to natural hydrograph, provide spawning and rearing habitat in mainstem and tributaries for anadromous and resident fish. This

alternative proposes the following strategies by implement incrementally, evaluating results and entailing less cost in the short term.

- **Broad strategy:** Implement in an experimental program that prioritizes recovery of imperiled stocks consistent with maintaining healthy stocks. All strategies must reduce cumulative mortality to a wider range of species and involve hydro and non-hydro actions.
- **Specific strategies:**
 - on an incremental basis, promote aggressive technological fixes at dams (spill, gas abatement);
 - develop surface bypass and other technologies;
 - extended length screens;
 - adult passage improvements;
 - transportation in low flow years;
 - 1.6 maf from upper Snake and 3 maf from Canada through purchase of water rights, current BiOp flow from Brownlee and Dworshak;
 - sliding scale, abundance based harvest, reduce ocean bycatch;
 - current hatchery production;
 - aggressive habitat recovery in mainstem and tributaries with tributary dam breaching where feasible;
 - re-establish floodplains, wetlands, estuaries;
 - water conservation and efficiencies;
 - technological fixes at dams to satisfy Clean Water Act;
 - reservoir rule curves for resident fish;
 - aggressive energy conservation and peak load management;
 - efficient, temporary economic mitigation for affected interests;
 - best management practices for grazing and forestry with large riparian set asides in salmonid streams;
 - reduced power peaking to protect spawning and emergence;
 - passage above Chief Joseph, Grand Coulee and Hells Canyon;
 - terminal fisheries on hatchery fish;
 - comprehensive monitoring and evaluation.

MANAGEMENT ACTIONS

None identified.

7.b Oregon office of NWPCC (no drawdown, dam retrofit, reverse staircase)

GOAL

Sustainable, naturally producing f/w to support social, cultural and economic practices such as tribal and non-tribal harvest, by restoring biological integrity and genetic diversity of ecosystem and through other ways compatible with naturally producing f/w. When devising strategies, consider economic and social factors to produce high quality of life and achieve multi-species goals.

OBJECTIVES

- **Primary:** Provide for healthier ecosystem, thereby reducing cumulative impacts on f/w to attain sustainable, diverse, harvestable populations.
- **Specific:**
 - Anadromous salmonids: promote wide array of life histories by restoring depressed populations and maintaining or enhancing healthy stocks and reintroducing and re-establishing stocks across traditional range where feasible.
 - Non-anadromous salmonids: Rebuild sturgeon and lamprey across historic range, if possible.
 - Native resident fish: promote wide array of life histories by restoring weak populations to sustainable, harvestable levels and enhancing healthy native stocks, and reintroducing and re-establishing stocks in traditional range where feasible and economically justified.

Non-native resident fish: maintain and enhance in areas where native populations are extirpated or their restoration is infeasible.

Wildlife: manage for native species, protect existing range, expand migratory corridors and link habitats to promote diversity; focus on habitat quality, not quantity. For non-native species, follow non-native resident fish protocol.

Socio-economic:

Cultural: allow salmonids to reach tribal treaty harvest objectives and lamprey and sturgeon to serve cultural needs.

Economic: Maintain shipping from all river ports. Maintain hydropower production to greatest extent possible and restore lost generation through aggressive energy conservation and peak load management. Maintain grazing through use of best management practices with riparian set-asides and fencing in fish-bearing streams and wildlife refuges and temporary mitigation for transition to different land uses.

Forestry: promote sustainable cut with 100-ft riparian set asides for fish-bearing streams and temporary mitigation for transition to best management practices.

Irrigation: seek water conservation and efficiencies.

Social/legal: strictly enforce Clean Water Act throughout Basin.

STRATEGIES

- As above, except that all strategies are implement at once, with large up-front costs and less biological risk. Potential to avoid the expense of some strategies based on biological response.

MANAGEMENT ACTIONS

None identified.

7.c Oregon office of NWPPC (no transport/drawdown incremental approach)

GOAL

Sustainable, naturally producing f/w to support social, cultural and economic practices such as tribal and non-tribal harvest, by restoring biological integrity and genetic diversity of ecosystem and through other ways compatible with naturally producing f/w. When devising strategies, consider economic and social factors to produce high quality of life and achieve multi-species goals

OBJECTIVES

- Same fish and wildlife objectives.
- Socio-economic objectives:
Cultural: allow salmonids to reach tribal treaty harvest objectives and lamprey and sturgeon to serve cultural needs.

Economic: Maintain shipping from Lewiston by moving to rail transportation; maintain barge transportation through lower John Day pool by using shallow draft vessels to Try Cities. Replace lost hydropower generation. Same objectives for grazing, forestry and irrigation.

Social/legal objectives: Pass legislative to draw down four lower Snake dams and John Day, strictly enforce Clean Water Act throughout Basin.

STRATEGIES

- Same "management intent" and "broad strategy."
- **Specific strategies**: As above, but incremental drawdown of two dams followed by evaluation and further drawdowns if justified by monitoring results. Drawdown is first strategy implemented. If response is less than anticipated, add restrictions incrementally, monitor response and add further increments if needed. Replace lost hydropower generation through least-cost mix of power purchases, aggressive energy conservation, development of cost-effective renewables, and high efficiency thermal generation. Mitigate incremental production of carbon dioxide through offsets.

MANAGEMENT ACTIONS

None identified.

7.d Oregon office of NWPPC (no transport/drawdown reverse staircase)

GOAL

Sustainable, naturally producing f/w to support social, cultural and economic practices such as tribal and non-tribal harvest, by restoring biological integrity and genetic diversity of ecosystem and through other ways compatible with naturally producing f/w. When devising strategies, consider economic and social factors to produce high quality of life and achieve multi-species goals.

OBJECTIVES

- **Primary:** Provide for healthier ecosystem, thereby reducing cumulative impacts on f/w to attain sustainable, diverse, harvestable populations.
- **Specific:**
 - Anadromous salmonids: promote wide array of life histories by restoring depressed populations and maintaining or enhancing healthy stocks and reintroducing and re-establishing stocks across traditional range where feasible. Non-anadromous salmonids: Rebuild sturgeon and lamprey across historic range, if possible.

Native resident fish: promote wide array of life histories by restoring weak populations to sustainable, harvestable levels and enhancing healthy native stocks, and reintroducing and re-establishing stocks in traditional range where feasible and economically justified. Non-native resident fish: maintain and enhance in areas where native populations are extirpated or their restoration is infeasible.

Wildlife: manage for native species, protect existing range, expand migratory corridors and link habitats to promote diversity; focus on habitat quality, not quantity. For non-native species, follow non-native resident fish protocol.

Socio-economic:

Cultural: allow salmonids to reach tribal treaty harvest objectives and lamprey and sturgeon to serve cultural needs.

Economic: Maintain shipping from all river ports. Maintain hydropower production to greatest extent possible and restore lost generation through aggressive energy conservation and peak load management. Maintain grazing through use of best management practices with riparian set-asides and fencing in fish-bearing streams and wildlife refuges and temporary mitigation for transition to different land uses.

Forestry: promote sustainable cut with 100-ft riparian set asides for fish-bearing streams and temporary mitigation for transition to best management practices.

Irrigation: seek water conservation and efficiencies.

Social/legal: strictly enforce Clean Water Act throughout Basin.

STRATEGIES

Same, but implementing all strategies at once, and drawing down four lower Snake dams to natural river and John Day to spillway crest. Potential to avoid the expense of some strategies based on biological response.

MANAGEMENT ACTIONS

None identified.

8. Montana Dept. of Fish, Wildlife & Parks

GOAL

Restore normative flow conditions in mainstem and headwaters; follow ecologically and economically sustainable operating strategy; restore naturally producing f/w throughout Basin by restoring and reconnecting habitats.

OBJECTIVES

- Implement dam operations that reduce storage drafts, improve refill probability and create more natural hydrograph downstream;
- Coordinate operations to extend runoff events for anadromous fish while protecting headwater species;
- Key operations to monthly inflow forecasts and tier springflow releases based on water availability at each project;
- Modify flood control operations to allow variable releases to simulate spring freshet;
- Gradually draft reservoirs to avoid flow fluctuations, reduce width or varial zones and enhance productivity

STRATEGIES

- Implement current IRCs and develop them for other projects, following specified protocol.
- Implement tiered flows for Kootenai white sturgeon below Libby.
- Implement VARQ flood control strategy to approximate spring freshet improve velocities in the Snake, JDA and MCN reservoirs by implementing results of PATH analyses, transfer peaking operations to headwater facilities

MANAGEMENT ACTIONS

- Complete IRCs for projects that lack them (via specific steps);
- Implement IRCs using tiered flows and VARQ strategy;
- Reduce reservoir drafts and improve refill to assure sustainable operations for all species;
- Replace static flow targets in lower Columbia with attainable, normative-type flow targets resulting from basin-wide application of IRCs;
- Coordinate mitigation with system operating plan;
- Reclaim habitat;
- Restore temperature regimes through selective withdrawal at storage projects and correlate flow and temperature with riverine fish growth and migrations for native species;
- Reduce watershed impacts through fencing and other passive measures and Rosgen techniques to restore original channel types;
- Establish alternative fishing opportunities; and
- Establish genetic reserves of important native stocks.

9. Idaho Department of Fish and Game

GOAL

None identified.

OBJECTIVES

- Be risk averse and robust across a range of scientific hypotheses and assumptions;
- Provide high likelihood of recovery within 24 years for Snake ChSp/Su with a 2-6% smolt-adult survival for inriver fish (perhaps 3-7% for steelhead);
- Provide a high likelihood of recovery within 24 years for Snake ChF by restoring more normative incubation, rearing and migration water temperatures, velocities, turbidity and micro-habitats; and reconnecting fragmented habitats;
- Preserve or enhance native stock structures and genetic diversity

STRATEGIES

None identified.

MANAGEMENT ACTIONS

- Focus on primary ecological factors limiting recovery, including divergent productivity of upriver and lower riverstocks
- Recreate key ecological functions rather than circumvent them;
- Focus on wild native fish, using artificial production where ecologically prudent
- Focus on listed anadromous fish while optimizing benefits for resident fish and wildlife.

10. Native Fish Society

GOAL

Protect and rebuild abundance and distribution of locally adapted, native wild salmonids, maintain genetic and life history diversity and ecological benefits.

OBJECTIVES

None identified.

STRATEGIES

- Define units of management action at population and watershed level;
- Inventory biological diversity to establish benchmarks for genetic and life history structure;
- Adopt biological objectives that maintain biological diversity;
- Develop science-based management plans that maintain biological diversity;
- Conduct scientific audit of results, research needs, policy and management issues;
- Involve the public in finding solutions.

MANAGEMENT ACTIONS

- Establish reference watersheds and populations as controls for a range of species and ecological conditions;
- Implement existing laws and regulations for fish, wildlife and habitat protection;
- Determine genetic and life history diversity as benchmarks;
- Establish sediment threshold for spawning areas that protect egg development and fry emergence;
- Establish temperature thresholds for adults; juveniles and eggs;
- Maintain a population structure that protects weak stocks, genetic and life history diversity;
- Re-establish sources of large woody debris;
- Re-establish ecological linkages in watershed;
- Use RASP to establish rebuilding plans for native salmonids;
- Replace mixed stock fisheries with known stock fisheries;
- Establish escapement objectives for watershed populations;
- Hold harvest managers accountable for meeting objectives;
- Terminate hatcheries that disrupt native fish genetic and life history diversity and have negative ecological effects;
- License hatcheries and review licenses;
- Conduct an annual status review of native stocks;
- Establish a Basin policy regarding protection of native fish genetic and life history diversity;
- Independent scientific review of funding proposals in which managers identify assumptions;
- Establish a peer-reviewed journal to document recovery program instead of relying on gray literature;
- Establish a biodiversity institute;
- Develop a science-based information service for decision makers;
- Review hatchery program's impacts on native fish;
- Establish a life cycle-based research and management program for salmonids;
- Stop transferring salmonids among facilities and watersheds;

- Test concept of hatchery that conserves wild populations.

11. Del Lathim

GOAL

Make downriver passage as safe as a natural river, increasing hydro generation 25%

OBJECTIVES

- Environmentally friendly passage for anadromous fish;
- Maintain economic benefits of hydro system;
- Protect the ecosystem the dams have created;
- Increase hydro output by 25%;
- Secure tribes' agreement to stop gill netting.

STRATEGIES

- Fish-friendly turbines.

MANAGEMENT ACTIONS

- Fine-tune prototype at Bonneville Unit #4; replace older Kaplan units with friendly turbines; discontinue fish screens; install turbines in skeletal bays and pass water through them instead of spilling.

12. Kokanee Recovery Task Force

GOAL

Stabilize resident fish at 75% of pre-dam levels within 12 years, showing progress in 4 years.

OBJECTIVES

- Meet fish passage efficiency goals;
- Meet water quality standards;
- Increase habitat;
- Increase aquatic population to historic levels;
- Maintain integrity of dams;
- Keep costs commensurate with benefits; and
- Find regional funding from diverse resources.

STRATEGIES

- Determine characteristics of resident fish food sources;
- Determine relationship of target species population dynamics and predators, including level of sustainable harvest;
- Emphasize wild spawning rather than artificial;
- Maximize spawning habitat by manipulating water levels during egg laying, incubation, emergence, and control post-emergence levels to prevent stranding;
- Bring 10 million eggs from other agencies to augment production;
- Use artificial devices to increase fry survival to 80%;
- Reduce gas supersaturation, move fry from Cabinet Gorge hatchery to southern part of lake to avoid gas.

MANAGEMENT ACTIONS

- Pend Oreille at 2055' in winter;
- Cabinet Gorge and Noxon reduce gas to 110% by 2001
- Buy 10 million eggs per year pending recovery;
- Transport fry to southern part of lake when gas exceeds 100%;
- Plant kokanee eggs in incubation protection systems in southern part of lake until gas problem is addressed.

13. Upper Columbia River Co-Management Entities

GOAL

A healthy Columbia River ecosystem that supports viable and genetically diverse fish with harvest and other societal benefits.

OBJECTIVES

- A stable, locally adapted Upper Columbia ecosystem that produces natural resident fish at pre-dam levels; and/or
- Reintroduce and build anadromous fish above blockages to historic levels.

STRATEGIES

- A comprehensive mitigation program of native resident fish restoration and non-native fish substitution as in Council program and MYIP; and/or
- Develop fish passage at Chief Joseph and Grand Coulee, concurrently re-introducing anadromous fish that genetically and behaviorally resemble former populations above those projects.

MANAGEMENT ACTIONS

None identified

14. Jim Litchfield

GOAL

Naturally spawning, sustainable and diverse f/w, balancing preservation of economic infrastructure including multipurpose river use.

OBJECTIVES

- Enhance core while protecting listed populations;
- Take actions with most biological benefit and least cost first;
- Through watershed audit, identify biological priorities for prime watersheds, production watersheds and watersheds unsuitable for fish;
- Establish population goals and harvest limits;
- Enhance production for harvest with no harm to natural production;
- Change dam configuration only where critical survival bottlenecks can't be addressed otherwise and costs are justified by probable biological benefits;
- Value over- more than under-escapement in harvest mgt;
- Manage flood events to facilitate scouring;
- Use watersheds as fundamental mtg. Unit;
- Regional council adopt top-down priorities, watersheds heavily involved in deciding how to implement them in balance with local priorities and;
- Modify laws accordingly, where needed;

STRATEGIES

- Scope is entire Basin;
- Develop unified plan that classifies biological objectives developed by regional council;
- Incorporates a high degree of local control;
- Covers the whole life cycle, including the ocean and estuary; and
- Because dam effects are uncertain, conducts a fish mortality audit for adults and juveniles, to guide changes in dam configuration (correct highest mortalities first, especially adult mortality).

MANAGEMENT ACTIONS

None specifically identified

15. Sun Mountain Reflections

GOAL

Redesign hydro projects to mimic natural aquatic structure, improve water quality, restore habitat, restore harvestable populations and maintain integrity of dams.

OBJECTIVES

- Increase hydro production
- Increase salmon and steelhead
- Improve harvest, habitat and hatchery management
- Maintain existing irrigation and allow more consumptive water use
- Maintain navigation to river ports
- Experiment, gather useful data

STRATEGIES

- Redesign hydro projects to mimic natural bathymetric structure using Wheels, Pools and Falls approach (on the basis of various studies comparing current conditions to historic conditions).
- Develop diverse funding sources including public agencies, tribes, commercial interests and the public.

MANAGEMENT ACTIONS

- Change policies from problem-specific management to resolution of underlying ecological problems that preclude multi-species recovery. View recovery investment as a regional economic benefit rather than a hydropower expense.

16. Rachel Stein

GOAL

Prevent further degradation, then improve environmental condition; ensure resilient social and economic systems

OBJECTIVES

- Establish baseline information;
- Identify human actions that affect ecosystem;
- Create scale to identify ecological tolerance;
- Define activities that can change;
- define surrogate measure for baseline;
- Standardize data and surrogate measurement; and
- Measure change

STRATEGIES

- Use ICBMP to establish baseline
- Use law and other values to establish scale of ecological tolerance
- Work within existing social structures to change human activities
- Define surrogate measures and use them in evaluation.

MANAGEMENT ACTIONS

None identified.

17. Oregon Water Trust

GOAL

Provide instream flows to support naturally functioning small streams

OBJECTIVES

- Restore flows in small tributaries to improve aquatic habitat and improve water quality.

STRATEGIES

- Buy senior water rights and dedicate them to streams.

MANAGEMENT ACTIONS

None identified

18. William K. Watson

GOAL

Salmon restoration

OBJECTIVES

None identified

STRATEGIES

- Improve dam passage;
- Find ways to artificially produce flow at edges of reservoirs; and
- Find ways to artificially clean reservoir gravels.

MANAGEMENT ACTIONS

- At a low dam in the lower river, experiment with new ladders;
- At the shortest reservoir on the river, experiment with ways to artificially produce flow at edges of reservoirs; and
- At the shortest reservoir on the river, find ways to artificially clean reservoir gravels.

19. Phillip R. Mundy

GOAL

Establish comprehensive fisheries management system that protect ecosystem functions, harvest, and other human uses.

OBJECTIVES

- Protect wild salmon and habitat;
- Maintain salmon escapements to protect potential salmon production and maintain ecosystem functions;
- Harvest salmon consistent with uncertainty regarding status of the resource;
- Control human activities that affect salmon;
- Build public support for salmon.

STRATEGIES

- Develop and implement a program of goals and objectives and enact them into law at national, state and local levels;
- Develop and implement tests or criteria to define objectives, measure progress, and adapt program with new information.

MANAGEMENT ACTIONS

- Use framework process and NPPC to develop goals and objectives;
- Enlist a regional forum of federal, state and local law makers to work on implementing legislation;
- Define objectives in terms that can be used in evaluating progress;
- Adapt management measures according to monitoring information.

20. Public Power Council

GOAL

Best possible balance between biological integrity, genetic diversity and sustainable, naturally reproducing fish and wildlife, with due consideration for economic and social constraints.

OBJECTIVES

- Institute effective governance;
- Develop a unified plan;
- Establish fish and wildlife objectives
- Protect the environmental
- Foster economic and social vitality.

STRATEGIES

- **Management:** Top-down decision making by federal, state and tribal entities coordinated with bottom-up input in planning and management, especially on habitat; decisions incorporate performance measure.
- **Fish and wildlife generally:** Clarify purpose of mitigation; consider entire life cycle and ecosystem; take actions with measurable results; and balance resident fish and wildlife values.
- **Naturally spawning fish and wildlife:** set escapement for watershed populations; use metapopulations as level of organization; expand from existing, strong core populations, giving lower priority to weaker populations; emphasize areas with highest potential for increasing numbers of fish and most native species; give more attention to ocean and estuary; ensure natural escapement; protect good habitat and restore degraded habitat; minimize hydro impacts.
- **Harvest:** manage to minimize impacts to natural fish and coordinate management regionally and internationally.
- **Environment:** view actions globally and recognize trade-offs.
- **Economic and social:** emphasize actions that promise most benefit, cost less, disrupt less, use existing institutions, have performance goals and end points, and are most efficient. Compensate adversely affected parties.

MANAGEMENT ACTIONS

None identified.

21. Port of Vancouver and Shaver Transportation Co.

GOAL

Maintain navigability

OBJECTIVES

- Improve quantity and quality of habitat (culverts at road crossings, removing obsolete structures like Condit);
- Don't draw down any mainstem dams; and
- Reduce predation by, i.e., terns.

STRATEGIES

None identified

MANAGEMENT ACTIONS

None identified

22. Melo Maiolie

GOAL

- Use mitigation funds for problems caused by the Federal hydro system;

- Focus recovery efforts where hydro impacts are greatest;
- Make recovery long lasting; and
- Operate hydro system so anadromous and resident species are not in competition.

OBJECTIVES

- Put 70% of total funds into on-the-ground activities and limit monitoring and evaluation to 15-25% of budget
- 80% or more of recovery efforts should mitigate direct effects of the hydro system
- Recovery efforts should match hydro impacts
- 70% of funds should go to long-lasting solutions for hydro problems
- Improve anadromous and resident species to at least 75% of historic levels
- Put priority on restoring production in natural lakes.

STRATEGIES

- Streamline BPA, NPPC, CBFWA and ISRP to use less than 5% of funds; and impose maximum of 25% overhead on individual projects;
- Put low priority on projects with high monitoring costs
- TBFWA develop formula for recovery efforts based on miles of rivers impacted, acres of reservoir created, wildlife units lost, and allocate funds accordingly
- Put highest priority on protecting fish that reproduce in the wild, lower priority on hatchery supplementation, and lowest priority to long-term hatchery programs with low potential to be self-sustaining;
- Consider all fish populations together when considering changes in hydro operations to avoid helping one and hurting another.

MANAGEMENT ACTIONS

None identified.

23. John R. Skalski, University of Washington

GOAL

An experimental approach to stream recovery that uses best technology across a range of conditions, using individual streams as replicate experimental units, with monitoring and evaluation to improve recovery strategies.

OBJECTIVES

- Stream-wide recovery measured by adult salmon returns, spawner-recruit ratios and fingerling-adult ratios (integrated responses of fecundity and survival) in an adaptive management framework
- Using field trials to assess whether remediation actions enhance responses over untreated streams
- Using a stair-step design to test progressively better strategies.

STRATEGIES

- With a large number of candidate streams and annual resources to address only a fraction each year
- Aim for replication and randomization
- Evaluate survival and fecundity
- Systematically measure water quality, biotic responses of invertebrates and habitat quality.

MANAGEMENT ACTIONS

- Best available technology used to improve stream quality in randomly selected streams, via fencing, reducing irrigation withdrawal, enhancing riffles and gravels, returning nutrients via carcasses.
- Measure results annually using pre-established decision rules and time frames.

- Use different actions in different subsets of streams to compare strategies and cost-effectiveness.

24. Scott O'Daniel, Confederated Tribes of Umatilla Indian Reservation

GOAL

Improve land management decisions by analyzing and maintaining watershed and sub-watershed data.

OBJECTIVES

- Construct a suite of coarse scale ecological characterizations for each watershed;
- Identify relevant, available data;
- Develop functional thresholds that characterize significant, measurable changes;
- Review and publish case studies that link abstract and empirical models; and
- Target ecological functions and patterns at critical/ESA spatial scales.

STRATEGIES

None identified

MANAGEMENT ACTIONS

None identified

25. Columbia River Alliance

GOAL

Rebuild salmon and steelhead hurt by human activity; maintain multiple purpose benefits of river; develop detailed subbasin plans using best science in most cost-effective way.

OBJECTIVES

- Develop/implement a plan to increase spawning runs of salmon and steelhead, complying with Federal law and maintaining resident fish and wildlife populations;
- improve passage at dams;
- provide more scientific certainty to mitigation;
- implement measures with least cost, highest biological benefit;
- expand monitoring and evaluation;
- maintain river's public benefits: hydropower, irrigation and increased consumptive use, navigation to existing ports, recreation and flood control.

STRATEGIES

- **Immediate actions:**
 - maximize transportation and reduce ineffective spill;
 - investigate surface collection;
 - reduce predation in mainstem and estuary;
 - expand genetic diversity by increasing escapement to allow fully-seeded habitat;
 - reduce mixed stock fishery, mark all hatchery fish;
 - complete subbasin plans and use watershed councils, CRP and incentives for landowners and others to improve riparian habitat.
- **Basinwide salmon management:**
 - establish a regional entity to design and manage salmonid recovery;
 - use research and monitoring to improve models for analysis and prediction;
 - chose cost-effective measures;
 - decentralize habitat decisions to watersheds, categorize habitat into "nature preserve" and "production/supplementation;" manage harvest to protect weak stocks;
 - use models to predict extinction prospects for listed stocks;
 - restructure hatchery management;
 - link habitat restoration and stock management to fully seed "nature preserve" areas and report results.

MANAGEMENT ACTIONS

None identified.

26. Murphy & Buchal: Goldendale, Kaiser, Northwest & Reynolds Aluminum

GOAL

Increase multiple benefits of dams and river through common sense application of quantifiable data.

OBJECTIVES

- Increase hydro production;
- Increase salmon and steelhead;
- Improve harvest, habitat and hatchery management;
- Maintain existing irrigation and allow more consumptive water use;
- Maintain navigation to river ports;
- Experiment, gather useful data.

STRATEGIES

- **Generally:**
 - Quantify benefits and costs of proposed measures;
 - implement f/w measure based on cost-effectiveness;
 - improve measurements of survival to identify high mortality areas;
 - use computer models to organize data and depict relationships to enable prediction;
 - use metapopulation models to predict extinction prospects for listed stocks.
- **Reorient management to meet legal requirements:**
 - Manage harvest to protect weak stocks;
 - manage hatcheries to achieve objectives;
 - sort habitat into "nature preserve" and production categories;
 - decentralize habitat decisions, focus regional decisions on interjurisdictional issues, limit hydropower funding to offsetting effects of hydropower.

MANAGEMENT ACTIONS

- **Mainstem:**
 - Focus on "hot spots" of mortality;
 - abandon spring flow augmentation and real-time flow management;
 - experiment with late summer/fall flow augmentation in low water years, using BPA contingency fund; maximize transportation, reduce spill at collector facilities, experiment with release sites;
 - optimize project-specific spill at non-collector facilities;
 - reactivate sluiceway passage, expand surface collection; replace old turbines with fish-friendly turbines;
 - assess natural mortality to distinguish human mortality
- **Hatcheries:**
 - unify reporting and measure success by returns to watersheds;
 - mark all hatchery fish;
 - fund genetic research to increase fish size, improve disease resistance, adapt to warm temperatures, increase abundance;
 - install spawning channels below tailraces;
 - expand existing mainstem spawning areas;
 - share tag revenues with hatcheries that return fish to watersheds;
 - move management to tribes;
 - declare some tributaries off limits to hatchery production and others as production/supplementation watersheds.
- **Harvest:**
 - Stop wild harvest, adopt tributary-specific escapement goals;
 - eliminate ocean harvest;

- redirect lower river mixed stock harvest to terminal areas;
- redirect tribal mixed stock harvest to ladder and tributary fishing;
- buy selective gear for harvesters;
- unify policing under US v. OR.
- **Habitat:**
 - Leave habitat issues to local level; abandon wildlife mitigation;
 - BPA Environmental Foundation fund habitat; evaluate cost-effectiveness of natural vs. artificial production.
- **Generally:**
 - Target research on project-specific effects;
 - expand passage models to whole life cycle;
 - build metapopulation models;
 - introduce mammalian predators to control terns;
 - allow limited marine mammal hunting.

27. Northwest Irrigation Utilities & Pacific Northwest Waterways Association

GOAL

Strong anadromous metapopulation that allow harvest; sustained resident fish; rebuilt weak stocks where cost is justified; river supports full spectrum of uses; hydro system is maintained and improved and supports ecosystem recovery consistent with integrated plan; and Region has an effective governance mechanism that operates to protect the river system, treaty rights and state water rights.

OBJECTIVES

- **Funding:** Dependable, long-term PMA and other funding for ecosystem recovery;
- **Management:** Existing entities coordinate efforts assume accountability and put a new system of financial management in place. Federal, state and tribal authorities maintained, stipulating that plan compliance satisfies ESA and Clean Water Act.
- **Ocean & estuary:** Maximize survival below Bonneville, emphasize actions with clear and immediate benefit for fish, including reduced ocean harvest and bird predation, and improve understanding of estuary.
- **Hatcheries:** Use to recover natural populations and provide harvest while protecting genetic diversity.
- **In-river harvest:** Optimize harvest while ensuring long-term viability of natural stocks.
- **Habitat:** Improve tributary habitat, providing financial incentives to landowners.
- **Water management:** Improve biological benefits, reduce societal costs, respect state law, emphasize watershed efforts and water transfers.
- **Hydro system:** Selectively improve system and operations, expand transportation

STRATEGIES

- **Funding:** Maintain regional influence over PMA to assure adequate funding, promote other funding.
- **Management:** Use NPPC or a successor to oversee plan, clarify authority with other jurisdictions. Once plan is developed, develop an executive order stipulating ESA and Clean Water compliance.
- **Ocean & estuary:** improve survival below Bonneville including selective decreases in ocean and estuary harvests.
- **Hatcheries:** Emphasize wild fish and supplementation in selected tributaries using production to support terminal harvest, not as replacement for natural spawners, and minimizing impacts on wild stocks.
- **In-river Harvest:** Reduce mixed-stock fisheries, ensure natural escapement, increase fishing and catch value; reduce fishery capitalization.
- **Habitat:** Substantially expand funding for spawning, rearing and migration habitat.

- **Water management:** Restructure BiOp flow program to protect mainstem fish while spending more on tributary mitigation with comparable biological benefits and using incentives for collaboration.
- **Hydro system:** Increase transportation and mix with spill, passage, and turbine passage improvement.

MANAGEMENT ACTIONS

- **Funding:** Commit up to \$500 million/yr. From BPA over 10-year period; assure continued availability of BPA contingency fund; protect BPA or create a regional entity to assume its role; leverage private and other funds.
- **Management:** Create entity with full regional support and tribal representation to pursue recovery in cooperation with governments and participation by interest groups; allocate funds between foregone revenues and expenditures; develop criteria for projects, monitoring and evaluation based on integrated plan, best science, judgment and balancing diverse uses; decisions not bound by operating agencies' perspectives; and consider a 3rd-party fiduciary to manage funds.
- **Ocean & estuary:** increase use of estuary for acclimation of transported fish; increase use of Young's Bay for terminal fishing; discourage terms on Rice Island; selectively decrease ocean harvest, providing incentives not to fish during return periods for certain stocks; research on ocean effects.
- **Hatcheries:** Set performance standards based on returns, emphasizing wild fish; use innovative release strategies to provide harvest; develop comprehensive plan for Basin; close down under-performing facilities; implant hatchery releases to reduce mixed-stock fishing; supplement under-seeded spawning areas; centralize incubation and rearing while increasing acclimation facilities; use low-cost, low technologies.
- **In-river harvest:** manage for escapement to spawning grounds; protect treaty rights and Zone 6 harvest; develop terminal fisheries; buy back commercial license; improve selective gear; provide incentives for reduced commercial fishing; provide sport fishing; use in-season stock assessment to manage fisheries; mark all hatchery fish; augment below-Bonneville releases with upriver fish.
- **Habitat:** Support watershed processes in Oregon and Washington plans; endow trust to fund private, local and tribal improvements; develop partnerships with timber companies, farmers, ports, tribes, towns and others; coordinate with Federal and state assistance programs.
- **Water management:** Eliminate BiOp spring-summer flow targets; evaluate biological benefits of Snake flow targets; fish managers establish flow augmentation for low water years, protect upstream resident species; priority on funding watershed capital improvements that help fish by improving stream conditions; respect hydrological conditions.
- **Hydro system:** various measures to increase transportation; bypass and turbine improvements at specific dams; moderated spill at collector projects, spill abatement measures

28. Clousten Energy Research

GOAL

Conservation of water taken for irrigation, stock watering and other purposes could be benefiting the habitat of multiple species. Application of existing technology and programs with innovative approaches when coordinated will provide improvements to water quality, affecting the aquatic environment of species throughout their life cycle. Conservation supports communities and economic development opportunities in some cases.

OBJECTIVES

- Improve water quality and quantity
- Improve acceptance of installation of fish screens
- Improve conservation of natural resources

STRATEGIES

- Apply conservation and enhancement measures for dams to water management activities and facilities, where applicable

- Establish adequate instream flow conditions for salmon by using, for example, the Instream Flow Incremental Methodology
- Undertake efforts to purchase or lease, from willing sellers and lessors, water rights necessary to maintain instream flows in accordance with appropriate state and Federal laws
- Identify and use appropriate water conservation measures in accordance with state law
- Install totalizing flow meters at major diversion points. For water withdrawn from reservoirs, install gauges that identify the water surface elevation range from full reservoir to dead pool storage elevation. Additionally, if the reservoir is located in-channel, install gauges upstream and downstream of the reservoir
- Screen water diversions on all fish-bearing streams
- Incorporate juvenile and adult salmon passage facilities on all water diversions

MANAGEMENT ACTIONS

- Support for pilot projects ought to be improved
- Cooperation with the private sector needs to be encouraged
- Conservation of natural resources is smart

D. Framework Concept Papers By Action Areas

The following table is a copy of the spreadsheet provided by the Framework workgroup. It shows the basic fish recovery elements of the different concept papers side by side. Concept Paper number 28 is not included because it came in after the production of this table by the Framework workgroup.

Activity or Objective	Concept Paper Number (See Section C Above)																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
HYDRO																											
Breach Lower Snake Dams	X	X	X	X	X	X				X																	
Provide passage at Grand Coulee and Chief Joe							X						X														
John Day at spillway crest	X		X	X	X	X	X			X																	
John Day at MIP		X																									
Additional flows	X	X			X		X			X																	
Secure Canadian storage		X					X			X																	
End/reduce juvenile transportation	X	X	X		X																						
24 hr. spill from Priest downstream		X																									
Meet fish passage efficiency objectives							X								X												
Water temperature control	X		X				X	X	X	X																	
Install gas abatement facilities		X			X		X			X		X															X
Improve turbine efficiencies	X						X			X																	X
Improve adult/juvenile passage	X	X			X		X			X	X							X							X		X
Install fish-friendly turbines							X			X	X															X	
Implement IRC's/VARQ		X						X																			
Manipulate water levels to protect spawning		X					X					X															
Modify flood control operations		X								X																	
Stabilize reservoir levels				X																							
Maintain navigability (dams in)							X								X						X				X	X	
Maximize/increase juvenile transportation																									X	X	X
Expand surface collection							X																			X	

Fish and Wildlife Implementation Plan EIS

Appendix D: Major Comment Issues/Framework Concept Papers

Activity or Objective	Concept Paper Number (See Section C Above)																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Reduce reservoir drafts and improve refill								X																			
Transport only in low flow years					X																						
Reduce/optimize spill																									X	X	
Abandon/reduce spring flow augmentation																										X	X
Redesign hydro projects															X												
Eliminate flow augmentation		X																									
Increase hydro production											X															X	
HATCHERIES																											
Biological priorities for naturally spawning fish	X						X		X	X		X		X								X					X
Improve hatchery Operations/mgt.	X									X															X	X	
Use Supplementation	X		X	X	X																X				X		X
Reduce use of hatcheries		X			X	X				X											X						X
Mark all hatchery fish										X															X	X	X
White sturgeon hatchery			X																								
Spawning channels below tailraces																										X	
HABITAT																											
Support normative river conditions	X	X	X	X	X	X		X	X	X									X								
Protect/restore/acquire habitat	X		X	X	X	X	X	X		X						X			X	X			X		X		X
Meet water quality standards	X		X							X					X												
Expand existing mainstem spawning areas		X								X																X	
Screen diversions	X									X																	
Limit water diversions			X							X								X									
Restore tributary flows	X		X							X							X						X				
Reduce pollution			X							X																	
Reduce predation	X		X																	X					X	X	X
Control land use			X							X												X					
Provide habitat incentives										X															X	X	X
Local watershed approach										X				X												X	X
Restore/consider estuary habitat	X		X							X											X		X				X

Fish and Wildlife Implementation Plan EIS
Appendix D: Major Comment Issues/Framework Concept Papers

Activity or Objective	Concept Paper Number (See Section C Above)																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Delineate hatchery and natural production watersheds														X												X	
Conduct watershed audits										X																	
Clean reservoir spawning gravels																		X									
More consumptive water use																									X	X	
Abandon Wildlife mitigation																											
HARVEST																											
Ensure harvestable stocks	X	X	X	X	X	X	X					X	X										X				X
Improve harvest management	X		X							X										X						X	
Protect/increase escapement	X					X				X				X					X	X					X		X
Develop known stock fisheries					X		X			X																X	X
Manage to weak stocks				X						X															X	X	
Abundance based harvest			X		X	X				X													X		X	X	X
OTHER																											
Restore salmon to historic abundance			X																								
Recover ESA stocks		X				X			X	X			X														
Protect/expand metapopulations		X				X				X				X						X							X
Enforce existing laws (e.g. CWA)	X			X	X		X			X																	X
Changes in or new laws needed										X				X					X								
Multi-species approach/protection		X		X		X	X	X	X	X				X								X					
Lamprey research/restoration			X			X	X			X																	
Comprehensive native resident fish program		X								X		X	X		X												
Better cost effectiveness		X								X				X	X					X					X	X	X
Compensate adversely affected parties							X			X										X							
Prioritize cost-effective implementation										X							X								X		
Implement PATH results		X						X																			
Diversify funding sources										X					X												X
"Reverse Staircase" approach						X																					
Establish genetic reservations								X		X																	
Reduce commodity subsidies	X																										
Maintain affordable, cost-based power	X	X			X						X				X												
Sustainable farming					X																						

Fish and Wildlife Implementation Plan EIS

Appendix D: Major Comment Issues/Framework Concept Papers

Activity or Objective	Concept Paper Number (See Section C Above)																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Better governance structure										X					X					X					X		X
Establish a Biodiversity Institute										X																	
Create artificial flows in reservoirs																											
Foster economic/social vitality																X				X					X		
Maintain irrigation					X																				X	X	
Stipulate ESA & CWA compliance										X																	X

E. Public Positions on Fish and Wildlife Management and Recovery

Through various media, individuals and organizations have expressed many viewpoints and perspectives on approaches to fish and wildlife management and salmon recovery. The spectrum of positions is broad, and often reflects the stakeholders' mission, interest, or area of expertise. The following sections present a sample of publicly expressed positions, and are not intended to be comprehensive.

Many believe that dams and salmon can co-exist together, and that dams are the lifeblood of our local economy by providing a major source of the Region's hydropower generation, flood and erosion control, farm irrigation, enhanced groundwater tables, recreation, tax generation, barge shipping, and by creating wetlands and wildlife habitat. These people oppose dam breaching, dam removal, reservoir drawdowns and river-flow augmentations; they support salmon recovery while also desiring to protect people, preserve jobs, and support the regional economy.¹ Others are diametrically opposed on every issue. Groups such as the Columbia River Conversations exist to defuse the potential for conflict by bringing scientific and economic information directly to people and by facilitating dialogue with experts and among neighbors.²

Religious Viewpoints

The Columbia River Pastoral Letter Project offered ten considerations for community projects to renew the watershed:

- (1) consider the common good;
- (2) conserve the watershed as a common good;
- (3) conserve and protect species of wildlife;
- (4) respect the dignity and traditions of the Region's indigenous peoples;
- (5) promote justice for the poor, linking economic justice and environmental justice;
- (6) promote community resolution of economic and ecological issues;
- (7) promote social and ecological responsibility among reductive and reproductive enterprises;
- (8) conserve energy and establish environmentally integrated alternative energy sources;
- (9) respect ethnic and racial cultures, citizens and communities; and
- (10) integrate transportation and recreation needs with sustainable ecosystem requirements.³

¹ Save Our Dams, <http://www.saveourdams.com/> (last visited March, 2003)

² Columbia River Conversations, http://www.columbiaconversations.org/pages/About_CRC.html (last visited March, 2003)

³ Columbia River Pastoral Letter Project, February 22, 2001, Seattle, WA.

Legal Viewpoints

Stakeholder organizations representing large numbers of individuals use the legal system to effect change in natural resource management. For example, Earthjustice and James L. Buchal use Federal and state environmental laws as the vehicle to change society's approaches to public lands; air and water pollution; toxic contamination; endangered species and wildlife habitat; and environmental justice.^{4,5}

Science Viewpoints

Scientists and organizations of natural resource professionals have weighed in on the species recovery debate. For example, a letter from 206 scientists (including state and Federal biologists) to the White House asked the President to seriously consider removing some Federal dams in the Columbia Basin to help restore fish runs and save endangered salmon from extinction.⁶ The American Fisheries Society encourages and supports the following:

- (1) development of comprehensive fisheries plans and management objectives;
- (2) further development and integration of standardized procedures in hydropower impact assessment;
- (3) better research to define critical impact thresholds for water quality parameters most commonly affected by hydropower projects;
- (4) development of mitigation techniques and technologies intended to reduce or eliminate adverse impacts on fisheries resources from hydropower development;
- (5) licensing agencies to establish a fund, either project-specific or pooled, that is sufficient to cover removal and restoration costs of nonfederal projects upon license termination; and
- (6) agency consideration of relicensing under present environmental standards.⁷

Viewpoints by Native American Indians

No single viewpoint captures the views of all Native American Indians. One viewpoint held by four tribes recognizes that fisheries are a basic and important natural resource and of vital concern to the Indians, that the conservation of this resource is dependent upon effective and progressive management, that Federal court decisions have specifically established that the tribes have treaty rights to an equitable share of the Columbia Basin fishery resource, and that by unity of action they can best accomplish these things, not only for the benefit of their own people but for all of the people of the Pacific Northwest.⁸

⁴ Earthjustice, <http://www.earthjustice.org/> (last visited March, 2003)

⁵ James L. Buchal, <http://www.buchal.com/> (last visited March, 2003)

⁶ <http://www.taxpayer.net/snake/Take%20Action/scientistletter.htm/> (last visited March, 2003)

⁷ American Fisheries Society, <http://www.fisheries.org/resource/page23.htm> (last visited March, 2003)

⁸ Columbia River Inter-Tribal Fish Commission, <http://www.critfc.org/text/twentyfive.html> (last visited March, 2003)

Twenty different tribes believe fishery regimes need to be developed that will have the least impact on the weakest stocks, while maximizing harvest opportunity on stronger wild and hatchery stocks; that the ESA should have a standard of salmon stock recovery that not only saves species from extinction, but also allows for treaty-reserved harvests; and that fish and wildlife resources and the ecosystems on which they depend must be managed in a holistic manner that recognizes that all things are connected.⁹

Financial Viewpoints

A compilation of opinions holds that the Federal government should compensate the Region for economic losses resulting from species recovery; however, others believe that the Region already is compensated through dam construction and low electricity rates.¹⁰ Some believe that incentive-based programs such as water markets can provide implicit compensation through the transfer or exchange of goods and services. Still others favor compensation or mitigation programs, such as worker retraining, that speed transition and increase political acceptance of changes. Many feel that in-kind compensation is preferable, particularly with an aim of equitable resource allocation. A number contend that it is possible to save money and save fish by partially removing the four Lower Snake River dams.¹¹

Viewpoints of Business, Industry, Agriculture, Forestry, and Ports

A coalition's viewpoint suggests that government bias for naturally spawned (wild) fish and against hatchery fish should be eliminated, that salmon listings that ignored hatchery salmon must be reconsidered, that government agencies must pursue sensible and balanced hatchery policies and programs to assure bountiful fish populations, that government has failed to protect salmon by allowing overharvest, and that governments should recognize and cope with the impact of protected predators and ocean conditions on salmon populations, while being careful not to impose restrictions on human activities in watersheds that will provide little or no benefits to fish.^{12,13} Many do not support removing or breaching Columbia and Snake River dams: they believe there is uncertainty about whether drawdown or natural rivers will benefit fish, that there is evidence that barging of salmon and steelhead is successful in moving smolts below the dams, and that improvements in dam bypass systems and collections systems can make them even more successful.^{14,15,16} Miners have expressed concern that the salmon recovery focus on

⁹ Northwest Indian Fisheries Commission, <http://www.nwifc.wa.gov/esa/tribes.asp> (last visited March, 2003)

¹⁰ H. Berry and R.B. Rettig. 1994. Who should pay for salmon recovery? A Pacific Northwest Extension Publication Oregon Washington, Idaho. PNW 470, <http://eesc.orst.edu/agcomwebfile/edmat/PNW470.pdf> (last visited March, 2003)

¹¹ Taxpayers for Common Sense, <http://www.taxpayer.net/snake/> (last visited March, 2003)

¹² Oregonians In Action, <http://oia.org/newssalmon.htm> (last visited March, 2003)

¹³ Common Sense Salmon Recovery, <http://www.salmonjustice.com/> (last visited March, 2003)

¹⁴ Direct Services Industries, Inc., <http://www.cyberlearn.com/dsi.htm> (last visited March, 2003)

¹⁵ Port of Lewiston, <http://www.portoflewiston.com/sdabd.html> (last visited March, 2003)

habitat may adversely affect mining.¹⁷ The forest industry has recognized the need for increased habitat and water quality protection through modified forest practices.¹⁸

Views of Fishing Groups

Many fishers have long opposed more dam-building and have endorsed the removal of several dams as necessary measures for salmon restoration.¹⁹ Many believe the most serious threat to fisheries resources is habitat loss, that the most severely depressed runs should be restored, and that the public should be educated about the true costs of salmon declines.²⁰ Noncommercial fishers have stated that restoring the lower Snake to a free-flowing river would restore Idaho's family and economic heritage of salmon and steelhead fishing, and that impacts to farmers and businesses should be fully mitigated.^{21,22}

Views of Conservation Groups

Many conservation groups exist with many opinions on fish and wildlife recovery. A common position is that hydroelectric dams are the biggest killers of salmon and steelhead, and threaten other fish and wildlife.²³ Many believe that the surest way to recover Snake River salmon is to remove parts of the four lower Snake River dams to restore natural river flows,^{24,25,26} and contend that barging is no substitute for more natural river conditions.²⁷ Most believe that selective dam removal can occur while producing an economic benefit. Others target changes they believe are needed in forest practices and other land uses affecting habitat to prevent the continued decline of Pacific salmon, concentrating on protection of the aquatic refuges, or remaining strongholds, of the species.²⁸

¹⁶ Pulp and Paper Workers Resource Council, <http://www.cyberlearn.com/pprc.htm> (last visited March, 2003)

¹⁷ Oregon Independent Miners, <http://oregon-independent-miners.com/govtp6.html> (last visited March, 2003)

¹⁸ Washington Forest Protection Association, <http://washingtonforests.com/forestsandfishlaw/index.html/>

¹⁹ Pacific Coast Federation of Fishermen's Associations, <http://www.pcffa.org/dams.htm> (last visited March, 2003)

²⁰ Institute for Fisheries Resources, <http://www.ifrfish.org/> (last visited March, 2003)

²¹ Idaho Steelhead and Salmon Unlimited, <http://www.idfishnhunt.com/issunews.htm#dam/> (last visited March, 2003)

²² Trout Unlimited, <http://www.tu.org/salmon/dams.html> (last visited March, 2003)

²³ NW Energy Coalition, <http://www.nwenergy.org/salmon/#dams> (last visited March, 2003)

²⁴ Columbia & Snake Rivers Campaign, <http://www.wildsalmon.org/about/index.htm/> (last visited March, 2003)

²⁵ Oregon Natural Resources Council, http://www.onrc.org/wild_oregon/salmonriver98/salmonriver98.html (last visited March, 2003)

²⁶ The Sierra Club Foundation, <http://www.sierraclub.org/foundation/programs/salmon.asp> (last visited March, 2003)

²⁷ Idaho Rivers United, <http://www.idahorivers.org/salfishbarging.htm> (last visited March, 2003)

²⁸ Pacific Rivers Council, http://www.pacrivers.org/article_view.cfm?ArticleID=1056&RandSeed=3737/ (last visited March, 2003)